LIHTC Developments in Atlanta and Neighborhood Effects

Jessica Plante, 4/5/15

Introduction

Quality and affordability are not the only important factors to consider when developing subsidized housing policy. Historically, subsidized housing has clustered in low income neighborhoods, furthering segregation and isolation of low income residents in cities across the country. Spillovers from housing programs have affected surrounding neighborhoods to long-lasting effect. Decisions regarding locations of subsidized housing involve consideration of efforts to create stable, integrated neighborhoods. Developing new, high quality affordable units may act as economic development in low income neighborhoods, bringing opportunity both to subsidized tenants and nearby residents. It may spur further investment in the area, attracting additional new development and resources, into previously deteriorated contexts. However, with historical controversy over large scale renewal efforts, there are fears that this change could go too far, leading to gentrification that pushes out low income residents not in subsidized units. This history, and attempts to correct it, are reflected in Atlanta in the progression from public housing to widespread HOPE VI redevelopment to small-scale but continual LIHTC development.

Additionally, neighborhood context can have a large effect on access to opportunity for tenants. Concentrating affordable housing in low income neighborhoods also furthers the concentration of poverty, and exacerbates associated issues. Thus more recent efforts have attempted to introduce units for low income tenants into higher income neighborhoods. Existing residents, however, often react with fear that bringing in low income renters will lower property values and change the character of the neighborhood for the worse. Fear of not only economic effects, but spillovers of potential crime and perceived moral ills are what resulted in the segregation and clustering of subsidized housing developments from the start. Today, existing high land acquisition values, exclusionary zoning, and overall local resistance all act as barriers to attempts at regional integration through subsidized housing development.

Whether these fears are founded in reality can help decide how these barriers can be overcome. Numerous studies discuss effects of historical subsidized housing endeavors in Atlanta, as well as effects of the current Low Income Housing Tax Credit (LIHTC) program in other cities. Studying the effects of recent LIHTC developments in Atlanta neighborhoods may uncover the veracity of either NIMBYism fears or gentrification worries, and thus inform future policy efforts towards regional income integration.

This study looks at how the number of LIHTC units in a census tract affects neighborhood characteristics after they are placed in service. A series of statistical regressions on these characteristics show that LIHTC units do not decrease property values and do not increase rents. This bodes well both to counter fears of NIMBYism and gentrification.

Historical Context

Public Housing and HOPE VI in Atlanta

During the Great Depression, the initial public housing projects were meant to be a long-term method of housing the poor. The construction activity was meant to create jobs and stimulate the economy, while the developments themselves were intended to be places where "families of modest means lived briefly while they worked hard to win a share of the American Dream" (AHA 2010: 6). However, decades later, changing policies and circumstances resulted in severely distressed properties that essentially trapped people in poverty.

Nowhere was this more apparent than in Atlanta, GA. In 1936, Atlanta was a "pioneer city" for public housing, with Techwood Homes located downtown as the first project (AHA 2010: 4). However, initial lofty goals fell by the wayside and by the 1990s, Atlanta was the most violent city in the US, with crime concentrated in public housing projects at thirty-five times the rate of the city (AHA 2010: 9). Rampant among public housing residents were myriad health problems, unemployment (less than 20% were employed), and the worst schools in the state (AHA 2010: 9). In the decades preceding HOPE VI, AHA invested $18 million renovating Techwood/Clark Howell Homes alone, but by 1994 "none of these

improvements were visible" (Boston 2005: 14). Overall the shoddy initial construction of the structures made upkeep financially infeasible. 88% of inspected units did not meet sanitary standards and vacancy rates were excessive, ranging from 20-50% (Boston 2005: 13-14). "What had begun as a bold social experiment to open the door into the middle class became a wall that forever separated public housing residents from economic opportunity" (AHA 2010: 6).

In 1995, HUD evaluated the Atlanta Housing Authority (AHA) management of its public housing, and awarded it a measly 37% out of possible points (Boston 2010: 15). Thus, when Atlanta was named as host of the 1996 Summer Olympics, for the city to represent its best face to the country and to the world, addressing the blight of public housing was essential-- the international eye certainly would not ignore it (AHA 2010: 5). Instead of possible receivership by the federal government, this led to the assembly of a new team-- including Renee Glover and other professionals from outside the failing public department-- and a new approach to public housing: one that would help lift both people and neighborhoods out of isolated blight and poverty. The new department positioned this approach as a win-win solution for both low-income residents and economic development of the city. Others cite Renee Glover's history as a corporate lawyer and senior aide for the new pro-business mayor Earl Phillips as evidence of where "true allegiances" lie (Keating and Flores 2000: 297).

In 1989, the Congress's National Commission on Severely Distressed Public Housing found that 86,000 out of 1.3 million public housing units nationwide qualified as "severely distressed" (Popkin, et al, 2004: 1). Clearly the current approach to public housing was inadequate, so they developed Housing for People Everywhere (HOPE VI) grants for states to try a new way of providing public housing.

A fundamental premise of this program was that physical response to social issues is not enough. Providing shelter may be better than no shelter, but by isolating low-income families socially and economically public housing actually served to worsen conditions. "After a few years of living in this social disorder, families that were only seeking rental assistance tended to become poorer and poorer, more dependent, distrustful and further stigmatized" (AHA 2010: 23). Any type of housing

may be better than no housing, but the context in which this shelter exists shapes the socioeconomic trajectory of its residents. Attempts to separate poor people from greater society did not allow more affluent areas to flourish; the blight of these "warehouses for people" only compounded the problem, as concentration exacerbated conditions for surrounding areas (AHA 2010: 6). As Boston concludes, "environment matters"; poverty is not a natural state specific to some people nor a punishment for loose morals (2010). Rather "people are poor" simply "because they have fewer resources than they need to live a more affluent life" (Glover, AHA 2010: 10). Unlike commonplace fears that poor people may not be capable of living in "mainstream" society and would destroy the communities of more affluent neighborhoods with their intrinsic social ills, if put in a new context with fresh opportunity and higher expectations, poor people have the capability to flourish.

HOPE VI also had economic development goals, and the AHA used it as a vehicle to promote "innovative" public-private partnerships that would reclaim valuable central city locations before the Olympics (AHA 2010: 29). In addition to leveraging private financing for community amenities, and not just housing development, HOPE VI also changed the demographics of the neighborhoods, by replacing 100% public housing units with only 40% public housing units, 23% rent subsidized, and 36% market rate (Popkin, et al, 2004: 15). This resulted in a controversial large-scale displacement of original residents across the region; in all only 17% were able to return to new communities (Keating and Flores 2000: 302).

Thus, in regards to economic development goals, Keating saw HOPE VI as a continuation of urban renewal programs that catered to opportunity goals of "business-led political coalitions" at the expense of displacing poor minority populations without adequate planning engagement, support, or compensation (2000). In this perspective, HOPE VI was an excuse to clear poor people off of valuable land and hide them before the Olympics came to town, rather than an attempt to improve lives and address issues of poverty. The public-private partnerships also position the government to prioritize capital investment over people and ties in with the neoliberal shift in the "role of urban governance from managerialism to entrepreneurialism" (Hanlon 2007: 83). Instead of constructing, managing, and

maintaining public housing as a form of direct governance, public housing authorities (PHA) instead incentivize private developers to create market-quality housing with an affordability component.

Low Income Housing Tax Credits

The most popular way that public-private partnerships to foster affordable housing development occurs is through LIHTC, in which private and nonprofit developers leverage private equity investment in exchange for tax credits, although the neighborhood effect of these developments have not been studied to the extent HOPE VI has. Each state determines priorities and standards for developments based on a Qualified Allocation Plan (QAP), which determines which projects get tax credits and awards competitive points based on a multitude of objectives. While the specificities of the QAP change in Georgia each year, its general objective is to produce a quality product that does not recreate the ills of concentrated poverty associated with traditional public housing. LIHTC developments ideally fill the affordable housing market gap with safe, quality units as well as encourage positive impact on the surrounding neighborhood.

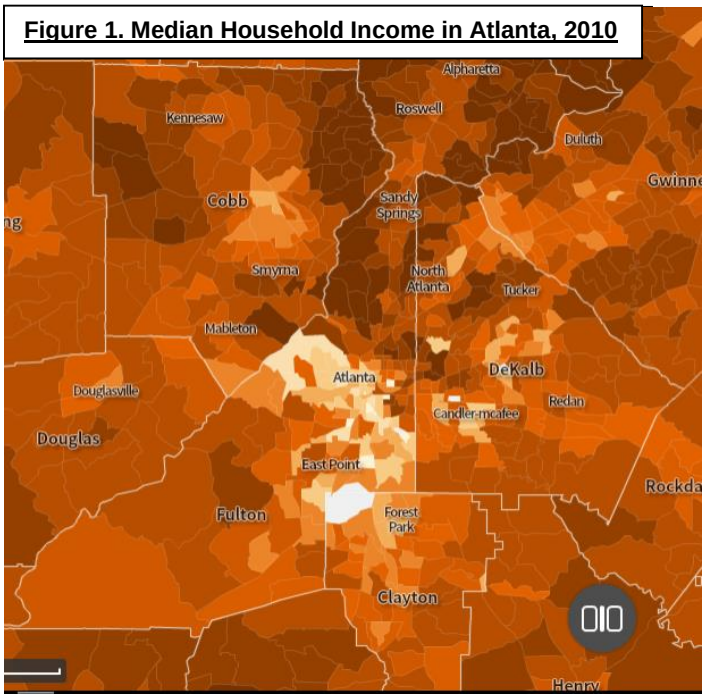
However, there is a tension in regards to where the QAP encourages developers to locate projects. On the one hand, under federal law, it grants bonuses of a 30% boost for developments in Qualified Census Tracts (QCT) and Difficult to Develop Areas (DDA). This encourages developers to provide housing in high poverty communities with a greater need for affordable housing where they might not otherwise build high-quality construction. A study of tracts with LIHTC in Chicago shows that these QCTs attract about six more units over the 18 year study period than non-QCTs (Baum-Snow and Marion 2009, 654). This shows that the basis boost either attracts more developers to submit applications in these tracts or that states are more willing to fund these projects.

To avoid concentrating poverty and recreating the isolation and disinvestment problems of past public housing projects, the QAP also awards points to QCT-located projects with Community Revitalization plans that show that the local government is also invested in bringing development to the area. On the other hand, the Georgia QAP, like many state plans, also encourages development in

communities with good resources available to residents, through awarding competitive bonus points (DCA 2009-2014). For example, competitive scoring might favor places in high performing school districts, near desirable amenities like grocery stores, and near employment opportunities. This works to aid in deconcentrating poverty and allowing low income residents to have access to resources more often available in higher income communities. Thus, there is a tension between locating projects with the goal to improve neighborhoods as a community development project and with the goal to improve the living situation of participating low income households through access to resources. The goals of LIHTC developers and state housing financial authorities must combat different fears of unintended consequences: displacement and gentrification or neighborhood deterioration.

The challenge of addressing both these fears is especially relevant in regards to Atlanta's history with subsidized housing development. HOPE VI redevelopment in Atlanta is often lauded as key to the reclaiming of downtown; history thus shows that quality privatized affordable housing can be utilized to attract economic development and investment in the area. However, this was only in the context of massive renewal efforts and displacement of residents, not the smaller scale development current LIHTC program encourages separate from other larger programs like HOPE VI. Furthermore,

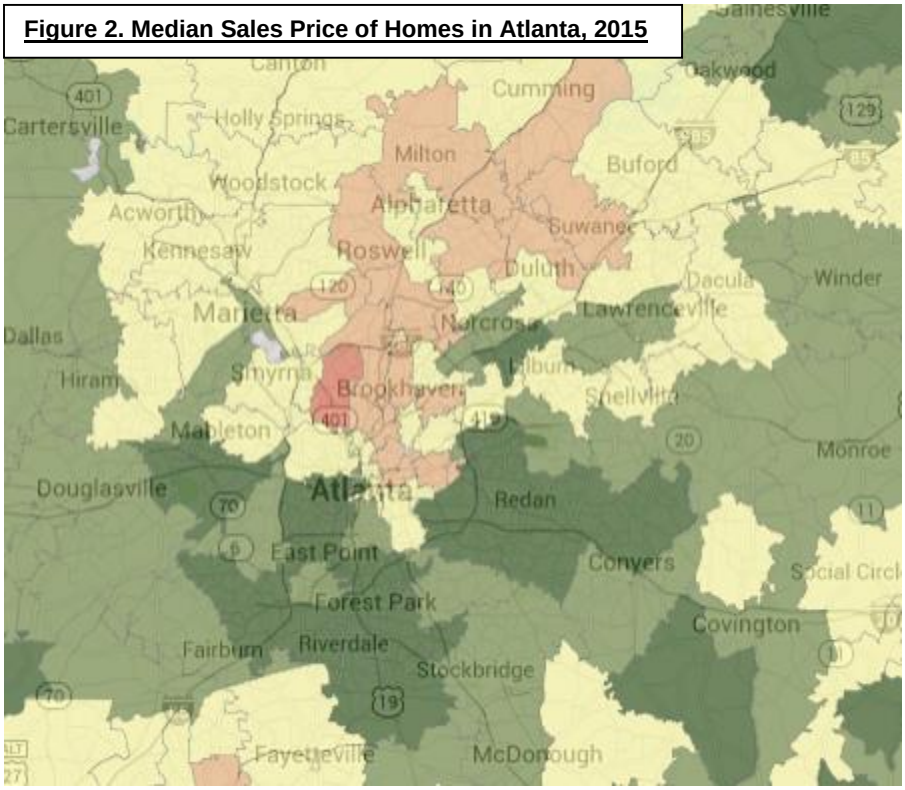
Figure 1. Median Household Income in Atlanta, 2010



Sheriff finds that while gentrification occurred in HOPE VI neighborhoods, the change was not different from comparison tracts without HOPE VI development (2007). Sites were chosen in part based on potential to harness positive effects of gentrification, but comparison tracts gentrified at about the same rates. Thus HOPE VI itself did not definitively have an impact on the likelihood to gentrify, but instead was part of broader efforts and trends. Additionally, the reshaping of neighborhoods through HOPE VI

did not result in a newly income-integrated Atlanta: the city is still home to vast spatial inequalities between classes (Florida 2012). The difference is that segregation now happens at different spatial scales. As Figure 1 shows, there remains a sharp segregation between devastatingly poor neighborhoods on the southwest sides of the metro area and richer, well-to-do neighborhoods on the northeast sides (Social Explorer, ACS 2010 5-year estimates). Subsidized housing development alone is not likely to solve all problems of inequality in Atlanta, but the history of HOPE VI efforts suggests that displacing public housing tenants with this redevelopment just creates new, poorer neighborhoods in other parts of the city. Massive crime, vacancy, and poverty in downtown areas shifted to other neighborhoods and were not cured.

Figure 2. Median Sales Price of Homes in Atlanta, 2015



Currently, central city Atlanta-- especially near the Beltline-- is seeing a revival in development and land values, while certain suburban regions are holding their value and appeal for higher income residents. Meanwhile, neighborhoods immediately south and west of downtown are still poverty-stricken, but with current development projects-- like the Beltline-- there is threat of these areas gentrifying along with the spread of other in-town development (Immergluck 2009). Figure 2 shows median sales price of homes, ranging from as low as $31,000 (dark green) to as high as $685,000 (dark red) (Trulia.com). Additionally, Atlanta is among the three worst metros for the “share of suburban poor living in tracts with poverty rates of at least 20%” with an increase of 29% in the past decade as well as having low rates of intergenerational mobility

(Kneebone 2014). When locating LIHTC developments in Atlanta, Georgia thus must keep in mind both historical attempts to develop mixed income neighborhoods as well as current neighborhood trends towards inequality and further segregation at different scales. Suburban location does always not equate with high opportunity neighborhoods, and inner city location does not always equate to declining neighborhoods.

How can the LIHTC program provide quality living situations for its tenants, while having a positive effect on the surrounding community? Is it preferable to focus on locating housing in high poverty communities that need development, or is it better to attempt to deconcentrate poverty by locating affordable housing in higher income neighborhoods? Or might a mix of these strategies, to create balanced, mixed location of projects, make the most sense? Do LIHTC projects actually bring greater resources to QCT neighborhoods, in terms of economic development? Do LIHTC projects in higher-income neighborhoods aid in deconcentrating poverty on a neighborhood scale that would not otherwise happen? Do LIHTC projects aid in gentrification of neighborhoods, displacing poverty to other locations? Are NIMBYism fears that LIHTC spurs disinvestment and deterioration, like past examples of public housing, founded in real effects?

Evidence on the Effects of the LIHTC Program

To answer these questions, there is considerably less literature on LIHTC developments than on HOPE VI or other large-scale housing programs, since the projects vary widely-- it is seen as a "funding mechanism not a development type" (Deng 2011, 784). However, LIHTC is one of the most popular programs among private developers building affordable housing. David Smith with the Affordable Housing Institute names it as "America's most successful affordable rental housing production program ever," defining this success by its longevity, with over two decades with permanent support and consistent funding, and its coverage with the financing of over 1,200,000 units (as of 2006) including over 95% of all new affordable multifamily housing nationwide (2006). Furthermore, fixed

amount of credit availability each annual cycle creates a “virtuous-circle feedback cycle” increasing the ferocity of competition through developers striving to meet public goals as outlined in the QAP. Thus the program’s size and prevalence, combined with the flexibility given to states to determine where and how they encourage development each year, makes it important to study the program’s impacts.

Affordable housing policy can encourage developers to locate in neighborhoods they would not otherwise. This is important in order to accomplish various public goals, such as: encouraging investment in QCTs, removing neighborhood disamenities through urban infill on vacant or derelict sites, discouraging segregation and isolation of lower income and minority populations, and allowing access to high opportunity neighborhoods for low income families. Additionally, even with policy encouragement, developers may still shy away from developing in certain neighborhoods due to backlash and fear over possible neighborhood effects of subsidized housing. Existing residents may put up barriers to a new subsidized influx of low income tenants, because they do not want affordable housing developments in their neighborhood (Not in My BackYard, or NIMBYism).

Specifically, existing homeowners in higher opportunity neighborhoods “often fight fiercely” against any affordable housing development in their neighborhoods with the assumption that low income households, or even the existence of subsidized units themselves, will lead to the deterioration of the surrounding neighborhood (Deng 2011, 868). Homeowners are less flexible to move to new neighborhoods if they perceive a change in conditions and they have money to lose in property values if affordable housing development affects the neighborhood in which that they own property. This is specifically linked to perceived moral ills of low income families, as a less “deserving” recipient of government subsidization, since housing projects with senior populations face less backlash (Rohe & Freeman, 2001).

What effect people expect LIHTC developments to have on surrounding areas depends on what type of neighborhoods they are located in. What distinguishes LIHTC from other types of development, in regards to what effect it will have on different types of neighborhoods, is twofold, in that physical quality of construction can bring investment to lower income areas, while the lower incomes of the

residents may result in backlash from higher income areas (Freeman & Botein 2002). The influx of low-income populations is feared to lead to disinvestment and lower property values. Thus NIMBYism becomes a barrier to policy measures aimed at deconcentrating poverty.

In addition to neighborhood resistance, there are other challenges to locating in more affluent areas related to financial and legal feasibility. For example, many sources of gap financing, like CDBG or HOME, are not available in affluent jurisdictions, because they are reserved to promote development in high poverty communities (Khadduri 2013, 8). This, along with higher land acquisition costs, can make low income housing infeasible, since such properties cannot support as much debt (8). Additionally, exclusionary zoning limiting multi-family or rental developments in many affluent communities, with the intention of preserving neighborhood property values, prevents LIHTC development regardless of any policy incentives. Proving to resistant neighborhoods that they have nothing to fear from the introduction of properly executed LIHTC development could thus aid in new financing sources as well as greater political feasibility in overcoming local resistance to siting such projects.

As it stands, the flexibility and decentralized nature of the LIHTC program allows states to encourage funding for all types of projects in a variety of locations. This includes underdeveloped rural areas as well as urban infill. Deng assesses a variety of developments across the Miami area according to a cluster analysis and finds that they can be grouped in neighborhoods ranging from high poverty or working class to middle class suburbs (2011, 869). Within the industry, representatives note that “developers and funders prefer to locate LIHTC developments in relatively safe and attractive places within a broader low-income community” (Edminston 2001, 16). However, for the most part, LIHTC projects are developed in low-income neighborhoods. McClure found that across all US metropolitan areas, 31.8% of LIHTC units placed in service in 2002 were located in tracts with fewer than 10% of the population in poverty (2008, 94). However, this supply is a similar rate as the local demand for low income housing populations in these tracts, meeting neighborhood need for housing, but not doing anything to overcome regional need for housing with the access to amenities low poverty

neighborhoods proide. Thus, while units are available for existing eligible populations in low poverty tracts, they do not promote income integration across a region. Woo, et al, found similarly high levels of LIHTC projects concentrated in low-income neighborhoods in Charlotte and Cleveland between 1996 and 2007, with 79% and 48% respectively (Woo, et al, 2014: 11). Deirdre Oakley at GSU found that across four major metropolitan areas, including Atlanta, found that neighborhood characteristics associated with low income populations do *not* significantly predict the presence of LIHTC developments, although LIHTC developments do tend to cluster near other subsidized housing (2008, 624). More recently the program has achieved expansion into low poverty suburbs, particularly through scattered site development efforts, but for the most part they still remain geographically concentrated (McClure 2006).

Developers often locate projects in low income areas, not only because there is less neighborhood resistance and lower acquisition costs, but because of both policy incentives and market positioning. While QCTs gained more LIHTC units in Chicago, the research also shows that LIHTC developers "differentially select gentrifying neighborhoods" (Baum-Snow and Marion 2009, 665). High poverty tracts with basis boosts attract more development, and this effect was more pronounced in tracts that had faster subsequent growth in housing values throughout the eighties in Chicago. Land acquisition and development costs will be cheap in depressed areas, but if the neighborhood is on an upward trajectory, developers can reap the benefits of increasing real estate values. They are able to buy the property cheaply, then after surrounding decreases in vacancies and crime, they can either start charging higher rents or at the end of the compliance period for affordability they can sell the property for much more. Understanding what affects LIHTC location will aid in shaping how to incentivize location according to policy goals.

Additionally, this conjecture suggests that LIHTC themselves likely have little effect on improving neighborhoods, instead taking advantage of existing trends. Baum-Snow and Marion also evaluated how LIHTC developments impact neighborhoods, particularly in regards to type of neighborhood (Baum-Snow and Marion 2009). They found that presence of LIHTC units depress

median incomes and has different effects in rental and owner-occupied housing markets (665). In this study, LIHTC developments increased turnover in nearby owner-occupied housing, had a mixed effect on property values, and crowded out construction of other rental housing but not owner-occupied. These effects were different for declining neighborhoods than for gentrifying ones. While presence of LIHTC projects raised property values in declining areas, there was no significant effect in gentrifying ones. While on average for all neighborhoods for each 1 LIHTC unit built there was only an overall increase of 0.8 more rental units overall, for gentrifying neighborhoods each LIHTC unit only increased overall new units by 0.37. Eriksen and Rosenthal in a study of LIHTC development across the country between 1990 and 2000 confirmed that, while LIHTC crowds out new development of rental housing, the impact of this on low/moderate rental housing is likely small (2010). This indicates that in gentrifying neighborhoods, there is likely nothing to worry about in relation to NIMBYist fears.

Confirming positive neighborhood effects, Ellen and Voicu found that new LIHTC developments increase sales prices for nearby properties in NYC (2007). New developments increase immediate nearby sales prices by 5.7% and keep increasing prices over subsequent five years (2007, 4). However, this is in the particular context of New York City in the late 1980s and 90s, in which most developments in the study were built on distressed or vacant publicly-owned sites. Before LIHTC development, immediate property values to sites in this study were 14.6% lower than farther away but in the same neighborhood, implying that the distressed sites were a disamenity themselves (1-5).

In her study of LIHTC development in Santa Clara County between 1987 and 2000, Deng found similar results that LIHTC projects can have positive impacts on property values, but analyzes a wider range of neighborhood types. She finds that all developments increased surrounding values (2011a, 157). This effect is quite modest for upper-income neighborhoods, but for low income property values increased by about 5% of sale price; this effect further increased to 10% when looking at LIHTC developments over 50 units (2011a, 157-8). Green, et al, review eight pre-2002 studies in various cities that support the notion that LIHTC developments do not diminish property values, but instead may increase them in higher income areas; their own study finds mixed results-- several areas

appreciate in value more rapidly, but none deteriorated (2002). Additionally, the study did not find that tenant type mattered-- lower income LIHTC tenants and families did not impact property values more than elderly, as NIMBYists fear.

In a study of Kansas City in 2000, Edmiston concluded that LIHTC had a *positive* impact on physical property conditions of neighborhoods, indicating that subsidizing housing for low income tenants did not lead to neighborhood deterioration and disinvestment (2011). She linked this to possible "disamenity removal" through development of previously vacant or underutilized sites, because higher nearby property conditions were even more likely for large rehabs or small new developments (2011, 18). Neighborhood effects of LIHTC development thus might be more positive than vacant or deteriorated existing sites, but not necessarily more than other types of new development. This has an important conclusion when considering neighborhood type: high income places are likely to be able to attract other types of development, while high poverty neighborhoods may be stuck with vacant site disamenities without subsidized development. Nevertheless, the study still showed no evidence that any decrease in property conditions occur nearby LIHTC, so higher income neighborhood resistance is unwarranted.

Other literature suggests that LIHTC developments are too small to have any discernible effect on neighborhood quality, with no literature showing they cause neighborhoods to gentrify "as measured by quality measures such as well-performing schools, responsive public services, or safety" (Khadduri 2013, 2). While the investment in a new development may attract "special attention" to the area, even when engaging in disamenity removal by developing on a high profile vacant site, there are "few examples in which the revitalization of a development has placed the neighborhood on a positive trajectory" (Khadduri 2013, 3). Without further "concentration of resources, interventions in areas other than housing, or diversity of housing types", one development cannot singlehandedly do it all (2013, 2). Thus, Khadduri argues that rather than locate LIHTC with the intention of attracting further development in disinvested areas, instead state governments should focus on locating LIHTC in "balanced" locations to provide fair housing opportunities to low income families. Building in poorer locations only furthers

concentration of poverty and minorities, even if a neighborhood would not see new development otherwise: locating in low poverty census tracts gives families better access to jobs, resources, and educational opportunities, strengthening the legal commitment to fair housing (3).

Additionally, poor neighborhoods with existing older LIHTC will *already* see new LIHTC development when these properties reach the end of the compliance period and are eligible for recapitalization (3). There are competitive scoring points in the QAP favoring rehabilitation and preservation of existing affordable units, so that current tenants are not displaced and can continue living in the development (DCA 2009-2015). Any subsequent *new* placement of LIHTC units in low income areas disproportionately favors these areas, continuing concentration of poverty. Instead, developers and state housing authorities should consider the overall distribution of LIHTC units-- both existing and new. Thus, a prioritization of locating new construction in low poverty tracts will thus maintain balance in choice and opportunity for families in a variety of neighborhoods.

Meanwhile, Deng argues that the mixed results regarding the impact of LIHTC is due to the vast diversity of the projects, including the neighborhood context. LIHTC will have different effects on property values, for example, depending on whether property values are high or low to begin with (2011). She finds that black high-poverty and black/Hispanic working class neighborhoods had the most positive changes after LIHTC, while mostly middle-class neighborhoods and several working class neighborhoods had the most negative change (2011, 891). She attributes this to how dramatic changes occur when LIHTC developments "represent a significant portion of their neighborhood housing stock", either for better or worse (2011, 891). Also, for-profit developers are more willing to select distressed neighborhoods only if "they see something special about them, such as the presence of public subsidies or potential signs of revitalization" like market upturn or designation for redevelopment plans (891). In other words, neighborhoods are *already* on "the verge of transition" regardless of LIHTC impact.

Atlanta's history physically deteriorated public housing in crime-ridden, economically segregated neighborhoods drives the importance of current housing programs to consider neighborhood effects of

developments. Concentration of poverty in historical public housing seemed to only aggravate problems, so one way to avoid repeating mistakes is to better integrate subsidized housing into neighborhoods across the class lines. However, more affluent neighborhoods resist LIHTC placement in even small scale developments for fear of crime and impact on property values. The literature varies as to what effect LIHTC has on nearby neighborhoods, but despite differences in effect on low versus high poverty communities, and possible causes for this, there is little evidence upholding NIMBYist resistance. Discovering what effect LIHTC developments have on Atlanta neighborhoods in particular will further contextualize this evidence and help shape policy directions for the city in particular.

Data and Methods

In order to examine the association of LIHTC units with change in neighborhood characteristics, I matched the number of LIHTC units placed in service between 2000 and 2005 to census tracts in the 5-county Atlanta metro area. These five counties include Clayton, Cobb, DeKalb, Fulton, and Gwinnett; this includes the urban center as well as outlying suburban areas and smaller nearby cities such as Decatur, Norcross, Marietta, and Sandy Springs. There are a total of 478 total tracts in the study area.

I selected the range of time for units placed in service based on available Census data. The data for 2000 will show pre-existing conditions for the tracts, since it will likely take some time for any units placed in service during this initial year to have any effect on surrounding neighborhoods. To control for LIHTC units that existed before the study timeline, including units renovated as “new” units in the 2000-2005 data, I added a variable with this information for the study area. The year 2005 was chosen to correspond to the American Community Survey 4-year estimate data for 2005-2009. This gives enough time for any changes that could correlate with new developments to manifest, while avoiding noise in the data from the foreclosure crisis shortly after the time period. Additionally, the 2005-2009 estimate was chosen since it is the last year that the Census used 2000 census tract boundaries, so that data from both sets would match. Choosing the most recent public datasets

available over a range of years proceeding the foreclosure crisis during a more normal housing market will help shed the light on the future direction of LIHTC development.

LIHTC unit data were retrieved from the official HUD database (www.lihtc.huduser.org) and any missing information was checked against an in-house list from the Georgia Department of Community Affairs. This dataset includes number of subsidized units for each project, 2000 Census tract, as well as addresses and coordinates useful for geocoding.

Variables

What variables should be used to determine socioeconomic impact of neighborhoods? Ryan Sheriff used five indicators to assess gentrification in HOPE VI neighborhoods, based on Lance Freeman's study on socioeconomic change in urban neighborhoods: median income, median housing age, educational attainment, median housing price, percent of high income buyers (2007, 7; 2006). Sheriff's discussed how influx of more affluent populations into neighborhoods, along with subsequent reinvestment, defines gentrification (2007, 8). Tracking the above variables measures this, because variables like educational attainment are not likely to change in regards to specific nearby residents, but would be an indicator of shifting demographics and new populations. Median housing age is proximate to measuring new development, and median housing price indicates assessed economic value of the property. Using these variables will help assess the extent of socioeconomic change that occurs alongside tracts with and without new LIHTC units.

Deng used eight indicators to measure change, noting that these are commonly used indicators of "key components of neighborhood quality of life" and are able to "capture different aspects of neighborhood economic well-being" (2011, 878). They measure the two ways LIHTC can impact neighborhoods. First, surrounding populations of neighborhoods can change in response to the influx of disadvantaged, low income tenants, and this change she measures through three variables (unemployment rate, poverty rate, and percentage of households receiving public assistance). The remaining variables assess economic change in the neighborhood in correlation with the LIHTC as

quality, new development (median household income, median gross rent, median housing value, number of units built in last 10 years, conventional single-family mortgage approval rates) (2011, 878). However, all variables to some extent measure both the direct impact of tenants and secondary impacts of subsequent perceived attractiveness of the neighborhood.

Based on these studies, I considered six variables from Census data that indicate economic characteristics of both people and place within census tracts, to triangulate on whether neighborhoods declined or gentrified over the time period. I also controlled for urban versus suburban/rural tracts through population density, to assess whether the push/pull between these categories affected change in the other variables over the time period.

The nine variables are listed below. In parentheses are the variable names used in subsequent statistics tables, with either “00” at the end for data from Census 2000 or “05” for data from the ACS 2005-2009 estimate.

- Percent of population with at least some college education (college)
- Percent employed (emp)
- Median income (medinc)
- Occupancy rate for housing units (occ)
- Median year housing units built (yrbuilt)
- Median housing values (hval)
- Median rent (rent)
- Population density, in population per square mile (popdens)
- LIHTC units placed in service 2000-2005 (lihtc)
- LIHTC units squared (lihtc2)
- LIHTC units placed in service before 2000 (lihtc_before)

Descriptive Statistics

Figure 3 shows that with the total mean population of census tracts changing by 1,118 people (totpop_chg), the mean population density also changed by about 327 people per square mile (popdens_chg). The change in population density varies from tracts losing 8,464 people per square mile to tracts gaining almost 16,000, with a standard deviation of about 1,500.

With increased urbanization, Atlantan census tracts on average became more attractive places, with rent and housing values increasing. The population became more educated, unemployment

Figure 3. Descriptive Statistics for All Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
popdens00	478	3.15	41459.27	3168.0921	2715.65008
college00	478	4.88	94.03	59.8152	21.20602
emp00	477	10.28	100.00	92.8357	8.57593
medinc00	478	4705.00	163474.00	52013.0209	24850.26596
occ00	478	42.34	99.13	94.0549	5.07000
yrbuilt00	478	1939	1997	1974.13	13.243
hvalue00	476	22500	1000001	150034.04	96326.468
rent00	476	168	2001	769.12	246.742
Valid N (listwise)	474				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
popdens05	477	149.23	33063.18	3502.0812	2908.06178
college05	477	7.80	98.51	61.1718	19.64323
emp05	476	11.57	89.96	63.5268	10.92769
medinc05	475	9066.00	236944.00	59346.0063	30780.00245
occ05	478	46.34	100.00	86.1267	9.19878
yrbuilt05	474	1939	2003	1977.64	14.338
hvalue05	473	64600	1000001	223419.03	128741.627
rent05	471	209	2001	981.28	269.553
Valid N (listwise)	468				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
popdens_chg	477	-8464	15919	327.35	1494.701
college_chg	477	-28.42	50.65	1.3780	10.12464
emp_chg	476	-86.10	38.67	-29.2938	10.79722
medinc_chg	475	-12698	73470	7230.42	11658.665
occ_chg	477	-48.80	41.54	-7.9868	7.95642
yrbuilt_chg	474	-14	52	3.45	7.419
hvalue_chg	473	-58600	426601	74961.52	54001.506
rent_chg	471	-662	1012	213.43	180.509
Valid N (listwise)	468				

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
lihtc_before	478	0	1001	15090	31.57	100.579
lihtc	478	0	1305	21020	43.97	125.791
Valid N (listwise)	478					

decreased (slightly), and income increased. However not all indicators show positive change. On average, vacancies increased and housing stock grew older. The variance of average median income of tracts belied continued inequality across the Atlanta region, with a standard deviation of almost $25,000 in 2000 and $31,000 in 2005-9. With the poorest tract clocking in at a median income of only $4,705 in 2000 and $9,066 in 2005-9, and the richest tract at $163,474 and $236,944, this is an incredible display of disparity in the region. Similarly, with a standard deviation larger than the mean change in housing values, not all tracts benefited from rising values over this time period.

There are a total of 21,020 units of LIHTC housing in the study area, divided among 119 developments in 76 census tracts. Many of the developments in the same tracts are different phases of the same project, so were applied for and placed in service in different years. The average census tract has 44 LIHTC units, with a maximum of 1,305 units in census tract 220.08 containing downtown Clarkston in DeKalb County.

Figure 4 shows that, on average, for both 2000 and the 2005-9 estimate, tracts without LIHTC developments scored higher on all socioeconomic indicators than tracts with LIHTC. However, for several variables, LIHTC tracts saw higher average change. LIHTC tracts saw average change of 3.13% population obtaining higher education, compared to non-LIHTC with 0.86% change. The average median age of housing for LIHTC became younger by 7 years over the time period, while for non-LIHTC only by 3 years. Rent in LIHTC tracts also increased by an average of $204, which is slightly higher than the $200 average increase in non-LIHTC tracts. The index discussed below summarizes these overall change in neighborhood conditions on a geographic level, further distinguishing overall trends in LIHTC versus non-LIHTC developments.

Figure 4. Average Values of Variables According to LIHTC Presence

	popdens	college	emp	medinc	occ	yrbuilt	hvalue	rent
2000								
non-LIHTC	3188	**62.49**	**93.45**	**54,747**	**94.37**	**1974**	**160,406**	**797**
LIHTC tracts	3066	46.10	89.68	37,991	92.43	1973	97,113	629
2005								
non-LIHTC	3556	**63.51**	**64.47**	**63,075**	**86.94**	**1977**	**235,145**	**1,011**
LIHTC tracts	3229	49.23	58.74	40,365	81.95	1980	164,037	833
Change								
non-LIHTC	359	0.86	**-29.08**	**7,855**	**-7.43**	3	**72,602**	200
LIHTC tracts	162	**3.13**	-30.94	2,375	-10.48	**7**	66,924	**204**

Figure 5. Descriptive Statistics of Neighborhood Conditions Index

	Statistics			Averages		
	Min	Max	Std. Dev.	Overall	w/ LIHTC	w/o
Index00	-20	14	5.1	0.04	-3.08	0.65
Index05	-11	9	3.7	0.01	-1.95	0.4
Change	-8	20	2.8	-0.03	1.13	-0.25

Neighborhood Conditions Index

Several studies label neighborhoods according to categories related to changes in conditions over time. Baum-Snow and Marion in their study characterized neighborhoods as declining, stable, and gentrifying, depending on which tercile they fall in appreciation of housing values over ten years (2008, 655). As touched on previously, Deng grouped Miami census tracts in clusters, in regards to geographic proximity and race/class demographic characteristics. To assess relative change between them and how presence of LIHTC correlates with changes, she took an average Z score of all variables over the study period (2011, 879). She then grouped neighborhoods according to most positive or most negative changes for future study.

Following concepts from these studies, an index based on all variables used in this study will help show overall differences between tracts with and without new LIHTC units. To build this index, I

added all the standardized values of the seven socioeconomic variables. Tracts with missing data were omitted. I created indices to assess neighborhoods both before and after new LIHTC units were placed in service. The change over the time period for the index was calculated by subtracting index values for 2005-9 from those from 2000. Figures 6-7 show the changes ranging from most negative (red) to most positive (green).

On average, tracts with LIHTC development do worse on the indices than those without LIHTC both before and after units are placed in service. Overall average index ratings are near 0, whereas they are negative for LIHTC tracts and positive for non-LIHTC tracts. However, the *change* in index shows that on average tracts with LIHTC increase in socioeconomic health after LIHTC development, while tracts without LIHTC decrease in quality. This striking change is shown on Figure 7. The spatial distribution of LIHTC units also shows a concentration of units in low income tracts, when compared to the map of income segregation in Figure 1. Even those developments in northern and eastern tracts,

Figure 6. Maps of Neighborhood Conditions Index For Both Years

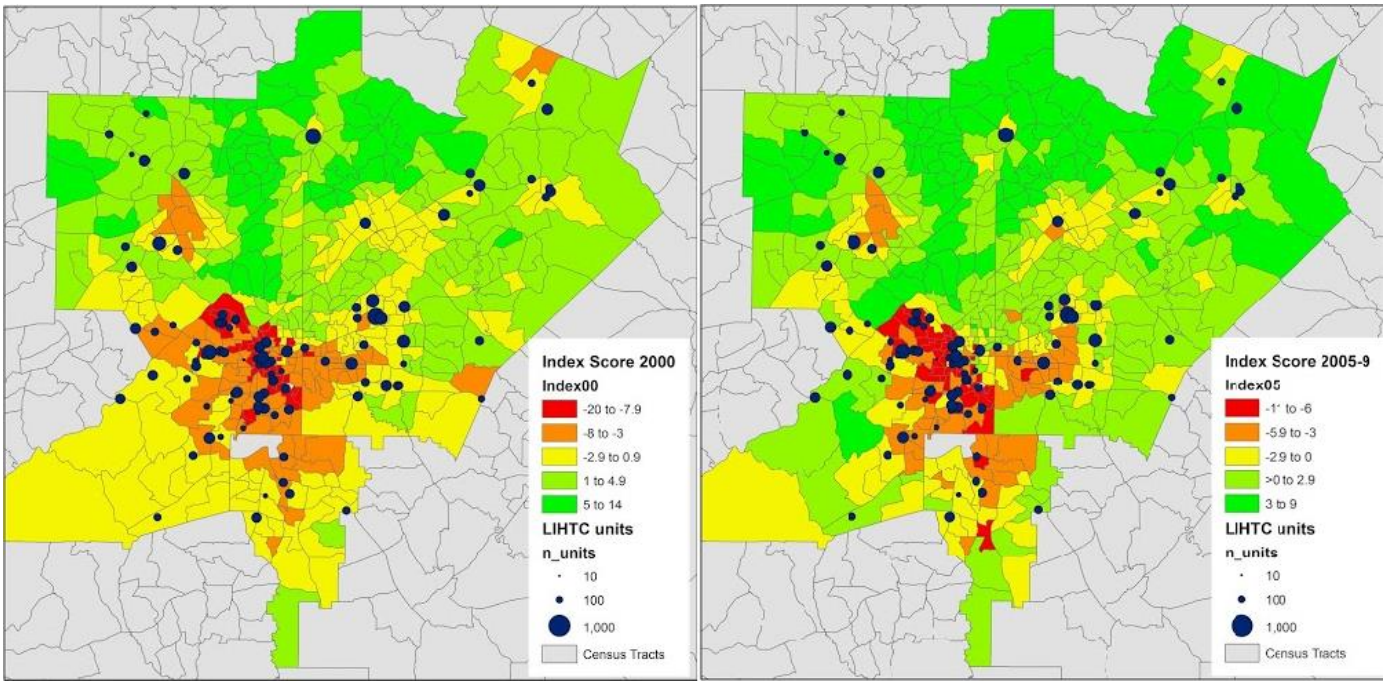
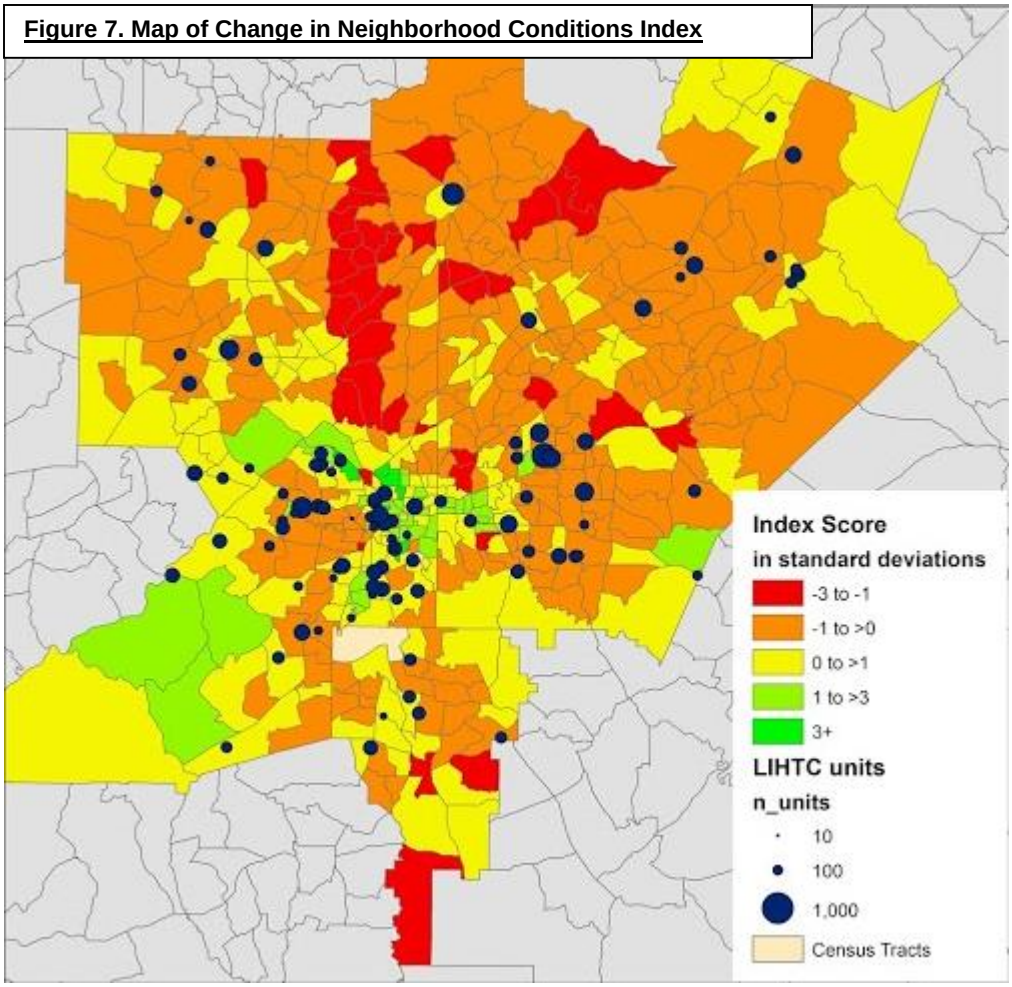


Figure 7. Map of Change in Neighborhood Conditions Index



the overall wealthier region of the city, are located in pockets of lower median income relative to the surrounding tracts. Thus, while LIHTC are not placed in the best neighborhoods to begin with, these neighborhoods are more likely to have overall positive change than those without LIHTC, although overall quality still stays below the average of non-LIHTC tracts. Isolating which variables are likely to drive this average effect will further detail how exactly new LIHTC correlates with neighborhood change.

Measuring the Association Between LIHTC Units and Neighborhood Change

For the next step, I did a series of multivariate regressions to see if any of the socioeconomic variables from the 2005-09[1] dataset could be predicted by the number of LIHTC units in the census tract. I experimented with controlling for each 2000 variable, as well as population density and LIHTC before the study period, to see what best explained variability for each dependent variable in 2005-9,

[1] The ACS 2005-2009 dataset is an estimate over this time period, so that these data are essentially estimating information for 2007, the *midpoint* of the time period.

controlling for the initial value of the dependent variable in 2000. Thus the analysis measures the association between LIHTC units and the change in the dependent variables from 2000 to 2005-9. The overall results show that number of LIHTC units explains some of the variability in median housing value, median rent, and year built, but has little correlation with occupancy, education attainment, or median income.

Median Housing Value

As Figure 8 shows, there was a wide range of variability in change of housing value between 2000 and 2005-9. I will next see what variables explain this variation, including if number of LIHTC units placed in service affects housing value.

Controlling for socioeconomic variables, existing LIHTC units, and population density, this model has a high adjusted R-square value of .916, meaning that this set of independent variables predicts 92% of the variability of median housing values in 2005-9 (Figure 8). The analysis of variability similarly allows the rejection of the null hypothesis that hval05 does not have a linear relationship with the independent variables. This model also tests for collinearity to see if this is affecting the significance of LIHTC units. While many of the control variables are multicollinear, as to be expected, relatively low multicollinearity for LIHTC units shows that they have additional explanatory power in relation to the control variables.

Overall, as shown in Figure 9, the existence of LIHTC can explain the change in median housing values over this time period in a way the control variables themselves do not. Number of new LIHTC units is significant at a confidence level of less than 90%. However, the coefficient is positive. In the model, for every 1 unit of LIHTC housing, median housing values in census tracts in 2005-9 increased by about $32. While not a sizable effect, this does show at least that development of this type of affordable housing does not result in drastically lower property values in the nearby housing market the way that NIMBY resistance fears.

Figure 8. Model Summary for Median Housing Value

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.958[a]	.918	.916	36782.74793

Figure 9. Regression Results for Median Housing Value

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2210846.483	326258.632		6.776	.000
	popdens00	-2.663	1.026	-.043	-2.596	.010
	college00	-61.903	158.729	-.010	-.390	.697
	emp00	-1480.712	266.780	-.097	-5.550	.000
	medinc00	.794	.159	.154	5.000	.000
	occ00	-1985.844	435.320	-.076	-4.562	.000
	yrbuilt00	-947.619	168.718	-.099	-5.617	.000
	hvalue00	1.337	.036	.917	36.698	.000
	rent00	-27.768	10.937	-.054	-2.539	.011
	lihtc	31.562	26.174	.031	1.206	.228
	lihtc2	-.020	.035	-.015	-.571	.568
	lihtc_before	10.792	17.482	.009	.617	.537

Median rent

Most tracts had somewhat modest increases in rent of several hundred dollars. Through multiple regressions I will test whether this variability can be explained by how many LIHTC units were placed in service over the time period. Figure 10 shows that the model for predicting median rent in 2005-9 has a sizable R square value of .683. The confidence level of the effect of LIHTC units on rents is only significant at a p value above 10%. However, it has a modestly negative effect on rent in 2005-9: for every 10 units of LIHTC, rents in the surrounding area decrease by almost $2. This shows that, while confidence in the surrounding real estate market (as measured by hval05) is not affected by the development of subsidized units, the affordability of nearby rental units remains. Housing values do not plummet and the rent burden of local residents does not increase, but may actually make nearby rental housing more affordable.

Figure 10. Model Summary for Median Rent

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.826[a]	.683	.675	152.508

Figure 11. Regression Results for Median Rent

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5830.881	1297.958		4.492	.000
	popdens00	-.004	.004	-.034	-1.030	.304
	college00	-1.315	.610	-.103	-2.155	.032
	emp00	-4.050	1.104	-.126	-3.669	.000
	medinc00	.007	.001	.628	10.812	.000
	occ00	-1.095	1.802	-.020	-.608	.544
	yrbuilt00	-2.537	.674	-.125	-3.763	.000
	hvalue00	.000	.000	-.153	-3.698	.000
	rent00	.580	.046	.528	12.689	.000
	lihtc	-.176	.109	-.084	-1.626	.105
	lihtc2	8.778E-05	.000	.031	.613	.540
	lihtc_before	.003	.072	.001	.041	.967

Median Income

Using median income of households in the census tract similarly will test the possible gentrification effects of LIHTC development. As Figure 12 shows, these results show that the correlation of LIHTC units with median household income in 2005-9 is statistically significant at a greater than a 90% confidence level, with a modest negative effect. For each new subsidized unit, median income decreases by almost $11. This does show that LIHTC development does not attract higher income populations into the area. However, the negative effect may be because of the influx of lower income population into LIHTC units themselves, not necessarily increase in lower populations in the rest of the neighborhood. Nonetheless, there is no conclusion that LIHTC dramatically affects the class makeup of the surrounding area.

Figure 12. Model Summary for Median Income

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.957[a]	.915	.913	8922.804

Figure 13. Regression Results for Median Income

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	662653.567	75845.302		8.737	.000
	popdens00	-.647	.249	-.044	-2.603	.010
	college00	139.410	35.635	.097	3.912	.000
	emp00	-255.637	64.564	-.070	-3.959	.000
	medinc00	1.175	.037	.955	31.879	.000
	occ00	-314.338	105.393	-.051	-2.983	.003
	yrbuilt00	-311.578	39.396	-.136	-7.909	.000
	hvalue00	.026	.007	.083	3.883	.000
	rent00	-8.184	2.628	-.067	-3.114	.002
	lihtc	-11.889	6.348	-.050	-1.873	.062
	lihtc2	.008	.008	.025	.982	.327
	lihtc_before	7.042	4.237	.024	1.662	.097

a. Dependent Variable: medinc05

Other Results

Results were inconclusive for the other variables (Median Year Built, Educational Attainment, Employment, and Occupancy). More information about these results are in the index.

Figure 14. Regression Results Summary

Dependent Variable	Effect of LIHTC (*significance)
Housing Value	Small positive effect
Rent	Small negative effect
Year Built	Small positive effect ***
Housing Units	Small positive effect **
Occupancy	Possible positive effect
College Attainment	Possible negative effect
Income	Small negative effect*
Employment	Possible negative effect

Summarizing Results

While the index shows that tracts with LIHTC more often have overall positive changes than those without LIHTC, the regressions in Figure 14 show that the effects of LIHTC on each variable are minimal and not consistently positive. This should assuage worries both 1) that the influx of low income tenants that new LIHTC bring to middle/high income neighborhoods will lead to deterioration of those neighborhoods and 2) that new investment through LIHTC development will lead to gentrification in low income neighborhoods. In this case, minimal effect means existing residents in neighborhoods need not worry about the introduction of affordable housing changing their lives in a discernible way. Housing policy should thus encourage development in locations that either have a lack of quality affordable housing or have good opportunity and access to resources for tenants.

Future research can study this with a longer time difference between datasets, to see if the likelihood that LIHTC correlates with neighborhood change takes more time to take effect. Also, studying the effects on low income and higher income neighborhood separately may also help identify if LIHTC has different effects depending on what the neighborhood is like to begin with.

However, despite lack of evidence showing negative change in neighborhood conditions, irrational fears of existing residents may persist. Other existing barriers, like high acquisition costs and exclusionary zoning, may also persist. Housing policy thus still has an important role in determining where LIHTC developments are placed and why.

Policy Implications

Qualified Allocation Plans "shape what applicants propose and what moves forward" in the process for selecting successful LIHTC developments (Shelburne 2008: 1). Analyzing what requirements affect location selection and subsequent community development effects will help direct how state departments can harness positive neighborhood effects of LIHTC in the research into policy. Khadduri argues that QAPs should aim to *balance* LIHTC locations between disinvested neighborhoods and low poverty ones, so as to further fair housing through opportunity and choice for low income households. She outlines four main priorities QAPs should have to accomplish this (2013, 10):

- Limit priorities for LIHTC developments in low-income neighborhoods to those that have neighborhood revitalization efforts with a real chance of success.
- Limit incentives that lock in the historical geography of affordable housing
- Create incentives for locating projects in high-opportunity neighborhoods
- Change QAP provisions that block projects from being developed in high-opportunity neighborhoods

Only those developments with the biggest guarantee of not furthering historical poverty concentration and chance of revitalizing neighborhoods should be encouraged. LIHTC by their nature do not necessarily turn a neighborhood around just through new construction and quality units; there must be an intentional effort to use the development as only one tool within a greater revitalization plan for change. Meanwhile, QAPs should attempt to dismantle existing challenges for developers to locate projects in "high-opportunity neighborhoods"; feasibility characteristics and historical barriers prevent

these areas from attracting LIHTC. The evidence from this study should help calm resistance by showing that LIHTC developments do not have negative effects on surrounding areas and may even improve neighborhoods.

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Appendix

Year built

LIHTC development appears to have a dissimilar effect on the housing and rental markets in the area, but how does this affect the likelihood that census tracts will attract new development due to LIHTC? The mean age of housing stock in 2000 was 26 years, and this increases slightly to about 30 years old in 2005-9 (Figure 15). This indicates that overall housing stock in Atlanta is aging and on average there was not much as much new development as in past years. However, some census tracts *did* see a large influx of new development, with average year built increasing by as much as 50 years.

Through multiple regression, I will test to what extent LIHTC explains this variability. Overall, the number of LIHTC units in a census tract does not seem to explain higher levels of development in the area past the new LIHTC development itself (Figure 16). The variable is highly significant, at a confidence level of 99%, which is to be expected as hundreds of new units in a tract has a direct effect

on median age of housing. However, the effect is modest, in that for every 100 units built, median age increases by just over 1 year.

Figure 15. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.912[a]	.831	.827	5.947

Figure 16. Regression Results Summary

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.240	50.549		.203	.840
	popdens00	-.001	.000	-.160	-6.783	.000
	college00	.120	.024	.177	5.060	.000
	emp00	-.454	.043	-.264	-10.544	.000
	medinc00	-2.862E-05	.000	-.049	-1.163	.246
	occ00	-.459	.070	-.156	-6.528	.000
	yrbuilt00	1.039	.026	.959	39.585	.000
	hvalue00	1.132E-05	.000	.075	2.508	.012
	rent00	-.004	.002	-.076	-2.520	.012
	lihtc	.013	.004	.115	3.074	.002
	lihtc2	-8.497E-06	.000	-.056	-1.521	.129
	lihtc_before	-.002	.003	-.012	-.625	.532

a. Dependent Variable: yrbuilt05

To better assess to what extent new LIHTC development affected the change in median age, I also conducted the analysis with the dependent variable of total housing units. There was a total increase of 248,679 housing units, with an average increase of 520 units. Census tracts gained on average only 44 LIHTC units each, with at least some of these units replacing old units. While vastly more housing units were added to the metro region than solely LIHTC units, whether these units were added to tracts with LIHTC could be telling. Tracts with any number of new LIHTC gained on average 786 total units and 269 affordable units.

The regression results show that, with above a 90% confidence level, for every 10 new LIHTC units, there are 10.43 additional units overall in 2005-9 per census tract (Figure 18). Meanwhile, for

every 10 existing LIHTC units in a tract, housing units in 2005-9 decreased by almost 2 units. Thus, even accounting for renovation of existing units, LIHTC development appears to not add significantly to overall housing stock. There is, however, the possibility that without LIHTC development, these tracts may have lost units overall.

Figure 17. Descriptive Statistics for Total Housing Units

Descriptive Statistics

	N	Sum	Mean	Std. Deviation
hous00	478	1143528.00	2392.3180	1282.19472
hous05	478	1392207.00	2912.5669	1822.83941
hous_chg	478	248679.00	520.2490	908.57479
lihtc	478	21020	43.97	125.791
lihtc_before	478	15090	31.57	100.579
Valid N (listwise)	478			

Figure 18. Predicting Total Housing Units in 2005-9

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.895[a]	.801	.796	818.78122

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2746.809	8010.116		-.343	.732
	popdens00	-.110	.023	-.124	-4.827	.000
	college00	3.091	3.350	.036	.923	.357
	emp00	-7.074	6.086	-.032	-1.162	.246
	medinc00	.002	.003	.026	.559	.576
	occ00	-13.245	9.654	-.036	-1.372	.171
	yrbuilt00	2.590	4.139	.019	.626	.532
	hvalue00	.000	.001	.017	.522	.602
	rent00	-.737	.241	-.100	-3.056	.002
	lihtc	1.043	.584	.073	1.786	.075
	lihtc2	-.001	.001	-.040	-.998	.319
	lihtc_before	-.259	.390	-.014	-.664	.507
	hous00	1.254	.039	.880	32.283	.000

a. Dependent Variable: hous05

Occupancy

While LIHTC units seem to decrease rents in the surrounding area, do they also decrease occupancy rates of nearby units? In other words, are rents decreasing because people are leaving the area to rent elsewhere? Or, since housing values rise in tracts with LIHTC, does this attract people to buy unoccupied houses? Overall, these variables have a much lower predictability for the variance in occupancy in 2005-9 than they do for previously discussed variables. With this in mind, LIHTC units are not a statistically significant predictor for occupancy rates, with low confidence rates of below 60% (Figure 19). If anything, they barely affect occupancy, with every affordable unit increasing occupancy by less than half a percentage points. This suggests that perhaps LIHTC units correlate with nearby housing attracting additional residents, and thus *not* leaving the tract to live elsewhere, but the null hypothesis cannot be rejected.

Figure 19. Predicting Occupancy Levels in 2005-9

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.749[a]	.561	.551	6.11754

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-46.865	51.978		-.902	.368
	popdens00	-.001	.000	-.149	-3.921	.000
	college00	.115	.024	.266	4.736	.000
	emp00	.023	.044	.021	.527	.598
	medinc00	5.397E-05	.000	.146	2.144	.033
	occ00	.483	.072	.258	6.722	.000
	yrbuilt00	.038	.027	.055	1.410	.159
	hvalue00	6.200E-06	.000	.065	1.335	.183
	rent00	.002	.002	.059	1.224	.222
	lihtc	.002	.004	.033	.549	.583
	lihtc2	-2.423E-06	.000	-.025	-.422	.673
	lihtc_before	-.004	.003	-.047	-1.478	.140

a. Dependent Variable: occ05

Educational Attainment

To further test what effect new LIHTC units have on nearby populations, I will test to see if the percentage of the population that has at least some college education changes along with LIHTC units. Since it is unlikely new LIHTC units would inspire nearby residents to attend higher education, any gains in educational attainment would be attributed to a new influx of educated residents and perhaps indicate gentrification in the area. However, the results of this show that the number of new subsidized units does not correlate in a statistically significant manner with fluctuations in the educational attainment of nearby residents (Figure 20). If anything, it is possible that LIHTC units result in attracting a less educated population, but only by less than 1 percentage point more population with college education for every 100 units. Thus, these results are inconclusive overall, except that it is unlikely LIHTC development attracts either more or less educated populations to any noticeable effect in surrounding areas.

Figure 20. Predicting Educational Attainment in 2005-9

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917[a]	.841	.838	7.85941

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	386.980	66.777		5.795	.000
	popdens00	-.001	.000	-.071	-3.123	.002
	college00	.828	.031	.891	26.435	.000
	emp00	-.370	.057	-.157	-6.502	.000
	medinc00	.000	.000	.190	4.652	.000
	occ00	-.709	.092	-.177	-7.681	.000
	yrbuilt00	-.142	.035	-.096	-4.083	.000
	hvalue00	6.791E-06	.000	.033	1.138	.256
	rent00	-.002	.002	-.023	-.780	.436
	lihtc	-.007	.006	-.046	-1.272	.204
	lihtc2	6.074E-06	.000	.029	.823	.411
	lihtc_before	.001	.004	.003	.172	.864

a. Dependent Variable: college05

Employment

However, it is also possible that development of new housing in the area generated economic interest in the area, creating new jobs for local populations. The model for percent of the population employed in 2005-9, however, only explains about 32% of the variation (Figure 21). Additionally, the number of LIHTC units are not statistically significant at a greater than 90% confidence level. If anything, for every 100 LIHTC units there is a decrease of only less than one percentage point in employed populations.

Figure 20. Predicting Educational Attainment in 2005-9

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917[a]	.841	.838	7.85941

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	386.980	66.777		5.795	.000
	popdens00	-.001	.000	-.071	-3.123	.002
	college00	.828	.031	.891	26.435	.000
	emp00	-.370	.057	-.157	-6.502	.000
	medinc00	.000	.000	.190	4.652	.000
	occ00	-.709	.092	-.177	-7.681	.000
	yrbuilt00	-.142	.035	-.096	-4.083	.000
	hvalue00	6.791E-06	.000	.033	1.138	.256
	rent00	-.002	.002	-.023	-.780	.436
	lihtc	-.007	.006	-.046	-1.272	.204
	lihtc2	6.074E-06	.000	.029	.823	.411
	lihtc_before	.001	.004	.003	.172	.864

a. Dependent Variable: college05